

form and stature the proportions assigned to the 'Mediterranean race' [of Sergi], and thus can be described as the earliest known representatives of that race" (p. 354). It is, however, confusing to speak of the Paláikastro people as "anticipating" the Mediterraneans in any way; the Paláikastro skulls, though no doubt a few hundred years older than "those discovered at Zakro [on the coast south of Paláikastro] and described by Boyd Dawkins, and those from Erganos [a Mycenæan site in a valley running up from the Pediada plain into the Lasithí mountain-system near the Aphendis Sarakinos] described by Sergi" (p. 353), are of Bronze age date, while the Neolithic Mediterraneans belong to Sergi's race as much as the Mycenæans; the Paláikastro people were "Mediterraneans" (as Mr. Duckworth says on p. 349)—they did not anticipate them.

The Petsofá find of votive terracottas is paralleled by the very similar pocket of votive female figures and models of female breasts, &c., phalli, and figures of cows, of red pottery and blue glazed faience, found by Prof. Naville and myself during the past season in the eighteenth dynasty dust-heap of Queen Hatshepsu's temple at Deir-el-Bahari, in Egypt; a number of these votive figures were exhibited at the annual show of the Egypt Exploration Fund at University College, Gower Street, in July.

The pottery from Paláikastro is discussed by Mr. R. M. Dawkins, who publishes a very fine "filler-vase" (p. 311) of the well known Mycenæan type. For a parallel Mr. Dawkins refers to a representation of a vase in the tomb of Rekhmara, at Thebes in Egypt, published by Mr. W. M. Müller in his "Asien und Europa," p. 340, and by me in "The Oldest Civilization of Greece," frontispiece. This representation of the vase in question, for which not Mr. Müller, but the great Champollion is responsible, is, however, inaccurate. Mr. Dawkins would have found a better parallel from the tomb of Rekhmara in last year's "Annual of the British School," p. 171. Mr. Dawkins also contributes a most interesting account of a visit to the rather remote island of Karpáthos, between Crete and Rhodes, which should be of interest to geographers and anthropologists. To anybody who has seen them from the Eteokretan heights above Sitía, or from the shores of Grandes Bay by which Paláikastro lies, the islands of Kasos and Karpáthos offer a most alluring invitation; but it is not everybody who can spare the time to accept it. Mr. Dawkins has been able to do so, and is lucky.

The excavations at Phylakopi, in Melos, were conducted by the School before those at Paláikastro, in Crete, were begun. They are not yet completed, the work at Paláikastro having been taken up with the idea of returning to Phylakopi at some future date. It is to be hoped that this aspiration will be fulfilled, for Phylakopi is among the most interesting of "Mycenæan" sites. The excavations were carried out from 1896 to 1899, Mr. Cecil Smith being in command during the first two years, Mr. Hogarth in the third, and Mr. Mackenzie, now Mr. Evans's assistant at Knossos, in the fourth. Mr. Mackenzie was present during the whole four seasons, thus supplying the "element of continuity" in the excavations. Each of these gentlemen has contributed his quatum to the combined work which has been issued for the school by the Society for the Promotion of Hellenic Studies under the direction of an editorial committee, composed of Mr. Bosanquet, Mr. E. A. Gardner, and Mr.

G. F. Hill, of the British Museum. Messrs. Arthur Evans, Bosanquet, G. C. Edgar, F. D. Atkinson, and F. B. Welch have also contributed to the volume.

The result is a remarkably valuable and well got-up book, with an extremely good series of illustrations. Among articles which are all of equal value and interest it is invidious to direct special attention to any in particular, but while Mr. Bosanquet's on the wall-paintings and Mr. Edgar's on the pottery are of special interest to "Mycenæologists," those of Mr. Bosanquet on the early Ægean trade in obsidian, which seems to have radiated from Melos, and of Mr. Mackenzie on the general historical relations of the successive settlements, especially in connection with the Minoan culture, which Mr. Mackenzie has had such unequalled opportunities of observing in the course of



FIG. 4.—The site from north-east. Beach of boulders in the foreground. (From "Excavations at Phylakopi in Melos.")

his work with Mr. Evans at Knossos, will be of more general interest, and should be carefully noted by all students of early culture-development. The famous fresco of the flying-fish, the most remarkable example of Mycenæan art found at Phylakopi, is published in colour on Plate iii.; as a delineation of the animal it is remarkably accurate, and as a design most admirable.

Enough has been said to show that this year's record of the annual progress of the discovery of the older civilisation of Greece has in no way fallen behind its predecessors in interest. H. R. HALL.

#### NOTES.

ON Saturday last, September 10, the *Discovery* arrived at Portsmouth with the members of the British Antarctic Expedition. On Sunday Captain Scott received a telegram from the King offering His Majesty's congratulations on the success and safe return of the explorers. The King has directed that a new medal for service in the Polar regions shall be struck and granted to the officers and crew of the *Discovery* in recognition of the successful accomplishment of their enterprise. Commander Scott has been promoted to the rank of captain in the Royal Navy; and the nation's thanks are due to him, the officers, scientific staff, and crew of the *Discovery* for the successful way in which they have maintained the credit of our country in the records of geographical discovery. The first news of the expedition after the departure of the *Discovery* from New Zealand in

December, 1901, was brought by the relief ship *Morning*, which arrived at Lyttelton in March, 1903. From the information then received, described in *NATURE* of April 2, 1903 (vol. lxxvii. p. 516), it was evident that the expedition had already achieved great success, both in the way of exploration and of scientific observation. Further details of the first year's work of the expedition, especially with regard to the great southern ice barrier and the nature of the lands discovered, are contained in Captain Scott's official report communicated to the presidents of the Royal and the Royal Geographical Societies, summarised in these columns on July 30, 1903 (vol. lxxviii. p. 307). Upon the return of the *Discovery* to Lyttelton at the beginning of last April, accompanied by the relief ships *Morning* and *Terra Nova*, it became known that many specimens of great scientific interest had been collected, including fossil remains of dicotyledonous plants from an altitude of 8000 feet. The material thus accumulated, as well as the continuous magnetic records and other observations in terrestrial physics, will be of the greatest value to science, and the study of it will engage the attention of naturalists and physicists for some time to come. The specimens brought home include the emperor penguin and other rare Arctic birds and their eggs, geological and other specimens, a large number of photographs of Antarctic scenes, some of which were taken by moonlight; and a set of coloured drawings of parhelions observed when the sun rose.

THE report of the council of the Society of Chemical Industry was presented to the annual general meeting opened in New York on Thursday, September 8. From this report we learn that the number of members on the register on July 31 was 4134, as compared with 3050 at the previous annual meeting. The council urges that Government, through a department, should be in closer touch with commerce and industries. In Germany the functions of the Ministry of Commerce comprise the control of "all matters affecting handicrafts," and to it, as a consultative body, is attached the technical committee for industry, which studies the scientific progress of industries, and keeps the minister in touch with them. America has recently established a department of commerce and labour, and France has had a Minister of Commerce for some years. The council two years ago appointed a committee to cooperate with members of Parliament and others who are in favour of this reform. The council has given its support to a petition asking the Treasury that the National Physical Laboratory may be placed in a position to do its important international work by means of a grant for capital expenditure and an increased annual subvention. Among the more important researches carried out by the laboratory during the past year may be mentioned those on pure iron-carbon alloys, certain nickel-steel alloys, mercury standards of resistance, a comparison of thermometers up to 1100° C., and measurements of the specific heat of superheated steam up to a pressure of 200 lb. to the square inch. The society's medal, founded in 1896, and awarded by the council once in every two years for conspicuous service rendered to applied chemistry by research, discovery, invention, or improvements in processes, has this year been awarded to Prof. Ira Remsen, president of the Johns Hopkins University of Baltimore.

A LARGE party of members of the Liège Association of Engineers, the leading technical society in Belgium, visited London on September 12 and 13. On September 12 they proceeded to Teddington and visited the National Physical Laboratory, where they were received by Sir Edward

Carbutt on behalf of the executive committee. On September 13 they were entertained at dinner at the Hotel Cecil by the Iron and Steel Institute. Mr. E. Windsor Richards, who was president when the institute visited Liège in 1894, occupied the chair, and an eloquent speech of welcome was delivered by Sir James Kitson, past-president of the Iron and Steel Institute, and ably responded to by Mr. Jules Magery, the president of the Belgian society.

THE second International Philosophical Congress was held at the University of Geneva under the presidency of M. Ernest Naville on September 4-8, and was attended by 500 members, representative of every school of philosophic thought in Europe. We learn from the *Times* that the following papers were read:—Prof. Boutroux, of l'Institut Paris, on the rôle of the history of philosophy in the study of philosophy; Profs. Stein (of the University of Bern) and Gourd (of the University of Geneva), the definition of philosophy; Prof. Windelband (of Heidelberg), the present task of logic and philosophical inquiry in relation to natural science and culture; Profs. Vifredo Pareto (of Lausanne) and De Greef (of Brussels), the individual and society; and Profs. Reinke (of Kiel) and Giard (of Paris), neovitalism and finality in biology. At the sectional meetings the subjects under discussion were the history of philosophy, general philosophy and psychology, applied philosophy, logic and philosophy of the sciences, and history of the sciences.

IN connection with the reception given by the United States Naval Observatory to the eighth International Geographic Congress at Washington on Thursday, September 8, a special set of time signals was sent over the Western Union Telegraph Company's system from Washington to England for transmission over the lines of the Government, the Eastern Telegraph Company, and the Great Northern and Western Telegraph Companies to observatories in various parts of the world. The object of the signals was to mark the actual passing of midnight at Washington, and accompanying the signals was the following message:—"The eighth International Geographic Congress now in session in Washington sends with this midnight signal its greeting to the nations of the world through the courtesy of the various telegraph and cable companies." The *Times* states that the observatories at the following places sent complimentary responses in most cases immediately on receipt of the foregoing messages and signals:—Greenwich, Pulkowa (Russia), Helsingfors, Madrid, Lisbon, Rome, Madras, Mauritius, Cape Town, Melbourne, Adelaide, Sydney, Wellington, N.Z., Rio de Janeiro, and Cocos. It was hoped that the signals would have a favourable influence on the movement to secure the universal adoption of standard time, based on the meridian of Greenwich.

Science announces that the Department of Agriculture at Washington is making definite arrangements concerning the work which will be carried on with the Guatemalan ants found by Mr. O. F. Cook in Guatemala to kill the cotton boll weevil. Mr. Cook has authority under the chief of the Bureau of Entomology to carry to completion the study of the life-history of the Guatemalan ant, and of such other species of ants as may be involved, in order properly to understand the life-history of this species. He will also direct and superintend the further introduction of the *kelep* ant from Guatemala if the same is deemed necessary, and will supervise and carry out the work connected with the colonisation of the ant in the southern United States.

AN exceptional rainfall in Cuba is reported in the *Times* of September 10 as having occurred on June 13. Mr. W. A. Wilson, of the Public Works Office at Santiago,



writes that the storm lasted for three hours, and was accompanied with almost continuous thunder and lightning, and he estimates that at least 12 inches of rain fell during that time. Bridges and houses were washed away, and about a hundred lives were lost in that locality. The storm extended over a considerable area, probably 200 to 300 square miles, and the Guaninicum and Platanillo Rivers each rose 33 feet. Mr. Wilson gauged the fall for an hour and a half, during which time nearly 7 inches were measured. Santiago is a station of the U.S. Weather Bureau; we shall therefore hope to receive a fuller account of the storm. In looking through their last published report (1902-3), we do not find any figures equalling the above, but in Symons's "British Rainfall for 1000" 3.50 inches are recorded in one hour. The most noteworthy facts appear to be the duration of the great intensity of the fall and the large area over which the storm occurred.

THE Meteorological Council has recently issued part i. of "Climatological Observations at Colonial and Foreign Stations." In the preface Dr. W. N. Shaw states that the council has contemplated for some time the issue of summaries of the observations which they receive from the Foreign Office, the Colonial Office, or directly from the observers in various British colonies and dependencies, but that it has been unable hitherto to carry out the preparation of the observations for the press. Mr. E. G. Ravenstein, who was chairman of a committee appointed by the British Association at the Cardiff meeting in 1891 for the collection and discussion of observations from tropical Africa, has, however, been good enough to put together the observations for a large number of stations, and to superintend the preparation of the summaries. These have now been issued by the Meteorological Council for the years 1900-2, with summaries for previous years, and form a very valuable contribution to the meteorology of that part of the world. The observations refer chiefly to stations in the Egyptian Sudan, British East and Central Africa, and Rhodesia. The volume is accompanied by useful sketch maps showing the positions of the various stations.

DR. F. M. EXNER contributed a useful paper to the Vienna Academy of Sciences (*Sitzb.*, Heft x., 1903) on a relation between the distribution of air pressure and amount of cloud, based on an examination of the mean values of twenty years' observations. The question to be solved was with what distribution of pressure, with a west wind of given strength, has Vienna a certain amount of cloud or rainfall. The result of the investigation showed that when the air flowed from an area of steep barometric gradients to one of slight gradients, it was accompanied by bad weather, and *vice versa*. The reason is that in the first case more air flows towards the locality than flows away from it horizontally, so that a portion of it finds its way to the upper strata, while in the second case the opposite occurs. The same rule would apply not only to a west wind, but would hold good for wind from any quarter. The paper is illustrated by a series of charts.

MESSRS. S. HIRZEL, of Leipzig, announce a new publication bearing the title *Jahrbuch der Radioaktivität und Elektronik*, to be edited by Dr. J. Stark, of Göttingen. Each volume will be issued in four quarterly parts.

THE mathematical and scientific section of the Imperial Academy of Sciences, Vienna, announces a prize of 2000 krone to be awarded for the best thesis embodying "an improvement in our knowledge of the hysteresis of dielectrics." The competition will close on December 31, 1906.

No. 16 of the *Physikalische Zeitschrift* contains several papers dealing with radio-activity. F. Paschen shows that when the kathode rays produced by radium are caused to impinge from above upon a photographic plate placed film downwards on a small sheet of platinum, an intense blackening is produced in the negative which corresponds in outline with the metal. That this effect is due to a secondary radiation, and is not caused merely by reflection of the kathode rays from the platinum, appears to be proved by the fact that when these rays are directly transmitted through a sufficiently thin plate of the metal, the darkening beneath the metallic film is much more intense than elsewhere. It is the  $\gamma$  rays which seem to be mainly responsible for the secondary radiation. Mr. H. A. Bumstead has carefully investigated the nature of the radio-activity induced in a negatively charged wire by exposure to the atmosphere. He concludes that the atmosphere contains principally the emanation of radium, but that the thorium emanation is also present to an extent varying largely with conditions such as the temperature and stillness of the air. On the other hand, Dr. E. F. Burton considers that the radio-active emanation which is evolved on heating raw petroleum is due solely to radium, and that a small quantity of radium itself is present in the oil. Miss C. Böhm-Wendt describes measurements which show that the amount of ionisation produced by polonium in different gases is independent of the nature of the gas. In this respect, therefore, polonium resembles radium.

It has long been a controversial question whether by the action of heat alone the line spectrum of gases can be produced. In the July number of the *Atti dei Lincei* R. Nasini and F. Anderlini endeavour to give a definite answer to the problem. On subjecting the vapour of iodine to a high temperature in a carbon tube heated in an electric furnace, they found that at slightly above 1000° an emission spectrum is produced which is the inverse of the usual absorption spectrum of iodine vapour. Similarly nitrogen at temperatures above 3000° gives an emission spectrum in which the principal lines characteristic of the element are visible. Under the conditions used it is probable that electrical influences were excluded, and that the spectra obtained were due solely to the high temperature employed. In the same number of the *Atti L.* Vanzetti has studied the electrolysis of glutaric acid in order to decide whether the dibasic aliphatic acids are capable of being converted in this way into polymethylene hydrocarbons, and whether the synthesis of a closed ring can thus be effected. The acid gave, however, only ordinary propylene, not a trace of trimethylene being formed.

WE have received copies of two interim reports issued by the Engineering Standards Committee. One of the publications contains British standard tables of copper conductors and thicknesses of dielectric; the other includes the British standard specification for tubular tramway poles. The tables and specification are to be regarded as final, and they will be embodied in the final report of the Engineering Standards Committee, which will combine all specifications. The tables dealing with copper conductors give the British standard sizes of stranded conductors for electric supply, and separate tables are concerned respectively with large, intermediate, and small sizes. Other tables provide British standard radial thicknesses for jute or paper dielectric, lead and armour, for underground cables, and British standard radial thicknesses for rubber dielectric, for lead sheathing and armouring. The specification for tramway poles gives full particulars as to construction, length, length of section, outside diameters, minimum thickness, &c., and also as to

what tests should be applied to the poles. As the preface to the specification says, a standard specification having now been arrived at as the result of the joint labours of the committee and the makers, it is hoped that, in future, the standards recommended by the committee will be universally adopted by all engineers engaged in designing and installing electrical tramways throughout the British Empire.

THE contents of the June number of the *American Naturalist* are chiefly biographical and botanical, Dr. R. T. Jackson contributing an account (with a portrait) of the life and work of the late C. E. Beecher, while Dr. B. M. Davis continues his studies on the plant-cell, and Mr. F. C. Lucas illustrates diagrammatically the range of variation displayed by the blossoms of the common cone-flower (*Rudbeckia hirta*).

THE entomological division of the Biological Laboratory of Manila has issued an illustrated *Bulletin* of fifty-eight pages, by Mr. C. S. Banks, the Government entomologist, on insects affecting the cacao, intended specially for the benefit of cultivators of that valuable crop in the Philippines. Every part of the cacao plant, from the root to the fruit, has its particular enemies, black ants and cicadas attacking the roots, while beetle-grubs bore into the trunk, and various Coccidæ and aphides damage the fruit. Fortunately the ravages of certain of these scourges are somewhat checked by other insects which prey upon the species damaging the cacao. Much further work is required before the whole history of cacao-hunting insects can be known, and the best means of checking their ravages devised.

WE have received from the publishers, Messrs. Asher and Co., Bedford Street, W.C., a specimen of a series of fifty coloured biological diagrams, reproduced from the German issue of Messrs. Schröder and Kulls, but with the explanatory legends in English. The plates are 34 by 42 inches in size, are printed in from six to eight colours, and are sold at 3s. each. The one with which we have been favoured illustrates the structure and life-history of the cockchafer, with comparative studies of other beetles. It is admirably adapted for school purposes. Judging from reduced photographic reproductions of other diagrams, we think those devoted to invertebrates are superior to those illustrative of mammals, so far as drawing is concerned; but this is a common feature in German zoological art.

IN the September issue of the *Quarterly Journal of Microscopical Science* Prof. E. R. Lankester re-publishes his valuable and profusely illustrated article on the structure and classification of the Arachnida from the tenth edition of the "Encyclopædia Britannica." One of the points emphasised in this communication is the affinity of the king-crab (*Limulus*) and the trilobites to the Arachnida rather than to the Crustacea; and in summarising the evidence for the arachnid nature of the former, the author alludes to the interesting discovery by Mr. Pocock of a rudiment of the seventh segment of the scorpion-limb in *Limulus*, thus bringing the two genera very closely into line. Another interesting feature to which special attention is directed is the mode of evolution of the "lung-book" of the scorpion from the "gill-book" of the king-crab, which appears to be a unique phenomenon. Among the other contents of the number in question may be mentioned two papers by Prof. W. B. Benham on new worms from New Zealand, and one by Dr. H. J. Hansen on new parasitic copepod crustaceans.

PARTS iii. and iv. of vol. xlv. of *Smithsonian Miscellaneous Contributions* contain an important paper by Mr. M. W.

Lyon on the hares, rabbits, and picas, illustrated by a number of figures of their comparative osteology and dentition. Needless to say, the old Linnean genus *Lepus* is much subdivided, and, unfortunately, the generic and subgeneric divisions adopted by the author by no means coincide with those proposed a few years ago by Dr. Forsyth Major in the *Transactions* of the Linnean Society—a notable divergence being the generic separation of the South African thick-tailed hare from the rabbit. Owing to the complexity of the classification adopted, some of the species of Leporidae cannot at present be definitely placed, and are therefore, strictly speaking, without subgeneric names. This will, however, be remedied in the course of time, and there is no doubt whatever that the present memoir—whether or no its proposed scheme of classification be adopted in its entirety—is an important contribution towards the right understanding of an exceedingly difficult group of mammals.

A SERIES of Jurassic ammonites from Echizen and Nagato in Japan has been described and figured by Prof. Matajiro Yokoyama (*Journ. Coll. Sci. Tokyo*, vol. xix., art. 20). The strata in the province of Echizen comprise a series of shales and sandstones, mostly of fresh-water origin, but divisible into a Lower or Ammonite bed, a Middle or Plant bed, and an Upper or Cyrena bed. The Ammonites include several new species of Perisphinctes, all more or less allied to foreign Lower Oxfordian forms, and one species of *Oppelia*, which exhibits a distant relationship to *Oppelia nobilis* of the Tithonian. The strata which have yielded Ammonites in Nagato consist of clay-slates, so that the fossils are much compressed. Species of *Hildoceras*, one of which is near to *Am. Levisoni* (of Wright); of *Harpoceras*, near to *A. lythensis* and *A. exaratus*; of *Ceoloceras*, near to *A. fibulatus*; and of *Dactyloceras*, near to *A. annulatus*, indicate that the Nagato slates belong to the Lias, and probably to the upper part of it.

SOME useful hints on the practical development of a farm wood-lot are given in a *Bulletin* of the Hatch Experiment Station of the Massachusetts Agricultural College, issued last May. The products required in this particular case were fire-wood, fencing posts, and lumber for making fruit boxes, besides which some poles and more valuable timber were obtained. The writer, Mr. F. A. Waugh, recommends larch for posts and chestnut and hickory for lumber. The illustrations added are numerous and well chosen.

THE formation of root-hairs in the vascular cryptogams and flowering plants has been studied by Mr. R. G. Leavitt, and his account, which is published in the *Proceedings* of the Boston Society of Naturalists (April), contains several points of interest. In the case of lycopods, horsetails, and a few ferns, the trichoblasts are determinate, but in all dicotyledons, except the Nymphaeaceae and most of the true ferns, root-hairs may arise from any external cell. Of monocotyledons, the Liliiflorae and Spadiciflorae generally conform to the latter type, but in the Helobiae, Glumiflorae, and Enantioblastae the root-hairs develop from definite cells.

THE annual report of the Botanical Department of Trinidad for the year ending March 31 has been received. The superintendent, Mr. J. H. Hart, states that he has succeeded in raising seedling sugar canes in Trinidad which compare with the best varieties obtained in Barbados, Antigua, and elsewhere. It appears that owing to the practice of cutting the plants annually in May, the seed production and the sucrose content are reduced, so that the experiment will be tried of allowing plants for seed to remain over for a longer period. The plantations of

Balata, *Mimusops globosa*, and of the imported timber trees, Honduras mahogany and African mahogany, *Kasya senegalensis*, are growing freely

FOR the forthcoming new edition of the "Imperial Gazetteer of India," Sir J. D. Hooker has written a chapter on the flora of India, which is prefaced by an introductory summary. With the authority of the Secretary of State for India, this chapter has been issued in an advanced form, and the summary is reprinted in the *Journal of Botany* (August). In the same number an account will be found of certain changes which will be proposed at the forthcoming congress of botanists to be held at Vienna in June, 1905, in connection with the rules which govern botanical nomenclature. The three lists of suggestions here given take the form of alterations in, or additions to, the Paris code, and have been drafted respectively by British botanists of the British Museum, American botanists of the Gray Herbarium, and a group of Italian botanists.

THE latest addition to the Manuelli Hoepli is a handbook dealing with artisan dwellings, by the engineer Effren Magrini, of Turin. In the same series Dr. Guido Sandrinelli has issued a new and completely revised edition of the manual of the late Pietro Gallizia on strength of materials and applied elasticity. It deals with calculations of strains and stresses in beams and other structures, and allied problems of use to the practical engineer.

No. 5 of the *Bulletin* of the Belgium Academy of Sciences contains an account by A. de Hemptinne of a remarkable electrolytic synthesis of stearic acid from oleic acid. This acid, when subjected in an atmosphere of hydrogen to the discharge of a Tesla transformer, combines with the gas to form principally stearic acid. In No. 6 of the *Bulletin* is a description of the preparation and properties of a number of fluorine-substituted amines. These substances are remarkable because of their extraordinary stability as compared with the corresponding chloro- and bromo-derivatives, which, as a rule, decompose rapidly at the ordinary temperature.

To the *Smithsonian Miscellaneous Collections* (vol. xlv., parts iii. and iv.) Prof. F. A. Lucas contributes an account of a nearly perfect skeleton of a pavement-toothed iguanodon (*Trachodon* or *Claosaurus*). The edentulous prementary and premandibular bones of the iguanodont dinosaurs are considered by the author to have been sheathed in horn, and thus to have formed a beak adapted for nipping off the branches or herbage on which these reptiles fed. Among other contributors to the same part are also Messrs. Jordan and Snyder, who describe several new deep-water fishes from Japan. These include a shark of the genus *Pristiurus*, as well as one of *Pseudotriacis*, and likewise a new genus, *Trismegistus*, allied to *Liparis*. *Trismegistus owstoni*, as the third of these new species is called, is certainly a very remarkable fish, somewhat like a sole in shape, although, of course, bilaterally symmetrical, with the skin dotted with prickles supported on broad bases, so as to recall inverted drawing-pins.

In the August number of the *American Journal of Science* Mr. Bertram B. Boltwood records observations which indicate that the quantities of radium present in several uranium minerals, which have been examined, are directly proportional to the quantities of uranium contained in the minerals. This is perhaps to be regarded as experimental evidence in favour of the suggestion that radium is formed by the breaking down of the uranium atom.

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IN the August issue of the *Annales de Chimie et de Physique* is a contribution by Messrs. Moissan and Rigaut on the use of metallic calcium in the preparation of argon. It is shown that the last traces of nitrogen, which are not so easily removed by a heated mixture of lime and metallic magnesium, are readily absorbed by passage of the gas over a small quantity of metallic calcium. An apparatus is described in which argon can be continuously produced at the rate of a litre every twelve hours.

SOME interesting experiments relating to the electrolytic reduction of carbonic acid are described by Messrs. Coehn and Jahn in the *Berichte der deutschen chemischen Gesellschaft* (vol. xxxvii. p. 2836). The reduction cannot be effected in acid solutions or in solutions containing the normal carbonates, but takes place readily in bicarbonate solutions. From this the authors conclude that the reducing action is limited to the bicarbonate ion, and that the carbonate ion and the undissociated carbonic acid molecule are not reducible. The reduction only takes place at those electrodes at which hydrogen is discharged at a considerable over-voltage, and the product of reduction is formic acid.

WE have received a copy of the report and recommendations presented to the Pharmacopœia Committee of the General Medical Council by Prof. Wyndham R. Dunstan and Mr. H. H. Robinson with reference to the tests for the detection of arsenic in the drugs of the British Pharmacopœia. It is found that the test proposed by Mayençon and Bergeret in 1874, if performed under certain conditions, is best adapted to the purpose. This test depends on the production by arseniuretted hydrogen of a stain on paper soaked in mercuric chloride. The method possesses the advantage of requiring only such a degree of purity in the acid and zinc as is to be found in purchaseable materials, and thus avoids the special purifications involved in the Marsh-Berzelius test. The stain decided on as the standard of comparison is that given by 0.012 milligram of arsenic.

## OUR ASTRONOMICAL COLUMN.

RE-DISCOVERY OF ENCKE'S COMET.—A telegram from the Kiel Centralstelle announces the re-discovery of Encke's comet at the Koenigstuhl on September 11. The position of the comet at 13h. 16.9m. (local M.T.) was

$$R.A. = 1h. 46m. 16s., \text{ dec. } = +25^{\circ} 24'.$$

These positions seem to be very slightly lower than the apparent positions given in the ephemeris reproduced in these columns on September 8. As this is the second comet of this year, it will be designated 1904 b.

DR. COMMON'S 60-INCH REFLECTOR.—In *Circular* No. 83 of the Harvard College Observatory, Prof. E. C. Pickering announces that, thanks to the generosity of an anonymous donor, who, unconditionally, gave twenty thousand dollars to the observatory, and to the intermediary services of Prof. Turner, the observatory has been able to purchase the well known 60-inch mirror which was made by the late Dr. Common.

Arrangements are being made to transport the mirror to Cambridge (Mass.) as soon as possible, and, when mounted, it will be used to complete the photometric survey of the heavens which has been so thoroughly—so far as means would permit—prosecuted at Harvard. With an instrument of this aperture it will be possible to measure the light of the very faintest stars known.

Prof. Pickering states that Mr. T. A. Common, from whom the mirror was purchased, let them have it on such favourable terms that he may fairly be regarded as having contributed a large portion of the cost.